

Abstract

Fatty Acid Profile and Health Lipid Quality Indices of Daily Meals Provided in Kindergartens in Novi Sad, Serbia [†]

Radmila Velicki ^{1,2,*}, Milka Popović ^{1,2} , Sanja Bijelović ^{1,2} and Ljilja Torović ^{2,3}

¹ Department of Hygiene, Faculty of Medicine, University of Novi Sad, 21000 Novi Sad, Serbia; milka.popovic@mf.uns.ac.rs (M.P.); sanja.bijelovic@mf.uns.ac.rs (S.B.)

² Institute of Public Health of Vojvodina, 21000 Novi Sad, Serbia; ljilja.torovic@mf.uns.ac.rs

³ Department of Pharmacy, Faculty of Medicine, University of Novi Sad, 21000 Novi Sad, Serbia

* Correspondence: radmila.velicki@mf.uns.ac.rs

[†] Presented at the 14th European Nutrition Conference FENS 2023, Belgrade, Serbia, 14–17 November 2023.

Abstract: Dietary fats, consisting of fatty acids (FAs), have diverse implications for disease prevention and treatment. Understanding the quality of dietary lipids is essential for managing chronic conditions and establishing food-based dietary guidelines. FAs naturally occur as mixtures of saturated (SFAs), monounsaturated (MUFAs), and polyunsaturated FAs (PUFAs), and their nutritional and medicinal values are evaluated using specific indices. This study aimed to assess the FA profiles and lipid quality indices of daily meals served in kindergartens located in Novi Sad, Serbia. During the autumn, winter, and spring seasons of the 2022/2023 year, meal (breakfast, snack, and lunch) sampling was conducted in a randomized manner on 15 unannounced days in each season. The nutritional composition and energy value of the sampled meals were determined, as well as their FA composition (GC-FID). The findings indicated that the average energy value of the daily meals met the recommendations of national regulations, as well as the daily fat intake, with a total fat intake amounting to 24.5 g/day during both the autumn and winter seasons and 23.4 g/day in the spring season. The predominant FAs were SFAs; their average intake was 11.9, 13.4, and 12.1 g/day during autumn, winter, and spring, respectively. MUFA intake exhibited minor variations across the seasons, with mean intakes of 7.8, 7.6, and 7.4 g/day, respectively. The highest mean PUFA intake was observed during autumn (4.8 g/day), while the winter and spring seasons displayed intakes of 3.5 and 4.0 g/day, respectively. Furthermore, regarding the lipid quality indices, the highest average values of PUFAs/SFAs, considered desirable, were identified during autumn (0.51 ± 0.31), whereas the lowest values were observed in winter (0.32 ± 0.27). The atherogenicity (IA) and thrombogenicity (IT) indices consistently exceeded the recommended value of one across all seasons, indicating an unfavorable lipid quality. The lowest IA (1.07 ± 0.66) and IT values (1.11 ± 0.49) were recorded during autumn. These results have significant implications for establishing national guidelines and nutrition standards, particularly for preschool-aged children, aiming to enhance health outcomes and mitigate the burden of chronic diseases on the healthcare system in the Republic of Serbia. Improving the lipid quality of meals provided in kindergartens can contribute to these objectives.



Citation: Velicki, R.; Popović, M.; Bijelović, S.; Torović, L. Fatty Acid Profile and Health Lipid Quality Indices of Daily Meals Provided in Kindergartens in Novi Sad, Serbia. *Proceedings* **2023**, *91*, 367. <https://doi.org/10.3390/proceedings2023091367>

Academic Editors: Sladjana Sobajic and Philip Calder

Published: 23 February 2024



Copyright: © 2024 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

Keywords: children; daily meal; lipid quality

Author Contributions: Conceptualization, L.T. and R.V.; methodology, L.T.; formal analysis, L.T.; investigation, M.P. and R.V.; data curation, L.T. and M.P.; writing—original draft preparation, R.V.; writing—review and editing, L.T. and S.B.; project administration, L.T.; funding acquisition, M.P. All authors have read and agreed to the published version of the manuscript.

Funding: This work was financed by the Novi Sad City Administration for Health—Grant No. XII-50-1/2023-4/10.01.2023.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: Data are contained within the article.

Conflicts of Interest: The authors declare no conflict of interest.

Disclaimer/Publisher's Note: The statements, opinions and data contained in all publications are solely those of the individual author(s) and contributor(s) and not of MDPI and/or the editor(s). MDPI and/or the editor(s) disclaim responsibility for any injury to people or property resulting from any ideas, methods, instructions or products referred to in the content.